Abstract

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Title of thesis: Synthesis of azaphthalocyanines with secondary amino groups on periphery

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The aim of the thesis was synthesis of alkylamino derivatives of azaphthalocyanines (AzaPc) with the secondary amino groups on the periphery of the macrocycle and the synthesis of suitable precursors of AzaPc. The preparation of the precursors 5,6-bis(bromomethyl)pyrazine-2,3-dicarbonitrile and 5,6-bis(cycloheptylamino)pyrazine-2,3-dicarbonitrile was successful. The cyclization of two precursors yielded the following unsymmetrical Aza-Pc: 2,3-bis(cycloheptylamino)-9,10,16,17,23,24-hexakis(*tert*-butylsulfanyl)-1,4,8,11,15,18,22,25-(octaaza)phthalocyanine (P10-H2) and its zinc(II) complex (P10-1Zn). The reaction of 5,6-bis(cycloheptylamino)pyrazine-2,3-dicarbonitrile yielded the following symmetrical AzaPc: 2,3,9,10,16,17,23,24–octakis(cycloheptylamino)-1,4,8,11,15,18,22,25-(octaaza) phthalocyanine (ZIP 99-H2) and its zinc(II) complex (ZIP 99-Zn). These substances will become valuable tools for future understanding of relationship between their structure and singlet oxygen production.